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Original Article

Conventional Adenoidectomy versus Endoscope-Assisted Adenoidectomy: Comparative Study

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Abstract

Objectives Adenoidectomy is a common surgical procedure in otorhinolaryngological practice.

Conventionally, adenoidectomy is performed with a curette. The present study aims to compare the conventional method with the newer endoscope-assisted adenoidectomy method.

Materials and Methods This prospective study was done in 36 patients requiring adenoidectomy at a tertiary care center from January 2020 to June 2021. The participants were allocated into two groups: group A (18) who underwent conventional adenoidectomy by curettage method and group B (18) who underwent endoscope-assisted microdebrider adenoidectomy. Data on indications for adenoidectomy, average surgical intraoperative time, and intraoperative blood loss were collected and compared between the groups. Postadenoidectomy symptom-based feedback was taken after 1 year. The intraoperative parameters were analyzed using mean $\pm$ standard deviation and independent *t*-test.

Results The average operative timing in the conventional adenoidectomy group was 13.89 ± 4.837 minutes as compared with 19.44 ± 4.706 minutes in the endoscope-assisted adenoidectomy group ($p = 0.001$). The average amount of blood loss in the conventional group was 21.528 ± 2.51 mL whereas in the endoscope assisted group it was 24.889 ± 4.45 mL ($p = 0.009$). None of the patients had any symptoms suggestive of recurrence on 1-year follow-up.

Conclusion Conventional adenoidectomy and endoscope-assisted adenoidectomy are safe and effective methods for adenoidectomy. Endoscopic adenoidectomy has the additional advantage of surgical removal under visualization. Depending on the clinical setup and with adequate training both procedures are effective.

Keywords
- adenoidectomy
- conventional curettage adenoidectomy
- endoscopic
- microdebrider

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Introduction

Adenoidectomy is the surgical removal of hypertrophied adenoids and is one of the most commonly performed otolaryngological procedures worldwide.[1] Chronic adenotonsillitis, otitis media with effusion, chronic rhinosinusitis, and sleep apnea syndrome are indications for adenoidectomy. Conventional adenoidectomy uses the blind technique of curettage. The use of endoscopes popularized by Cannon et al[2] has revolutionized the technique of adenoidectomy. Multiple methods evolved since the inception of the conventional method including suction diathermy, laser ablation, microdebrider, and coblator. Given the range of methods, there is a quest for optimal method. The optimal procedure for complete removal of adenoids should be safe with minimal blood loss, duration of surgery, and complications.

The study aimed to compare conventional adenoidectomy and endoscope-assisted microdebrider adenoidectomy based on parameters such as intraoperative blood loss, average operative timing, and follow-up after 1 year.

Material and Methods

This is a prospective observational study conducted in the department of ears, nose, and throat from January 2020 to June 2021. Ethical clearance was obtained from the Institutional Ethics Committee (INST.EC/EC/129/2019–20, dated October 18, 2019). Patients having symptoms of adenoid hypertrophy, confirmed by diagnostic nasal endoscopy or radiology requiring adenoidectomy were included in the study. We excluded patients with previous history of adenoid surgery and patients undergoing adenoidectomy with additional procedures. Our study included 36 patients who only underwent adenoidectomy and no additional procedures; with group A (18) undergoing conventional adenoidectomy and group B (18) undergoing endoscope-assisted microdebrider adenoidectomy. Informed consent was obtained from all the participants or legally acceptable representatives in case of minors. Detailed history was taken of the symptoms at the time of presentation to the outpatient department (OPD). All patients underwent clinical examination and necessary blood investigations. Adenoid hypertrophy was confirmed by X-ray nasopharynx lateral view or by diagnostic nasal endoscopy using 0 degree nasal endoscope. Endoscopic grading of adenoid hypertrophy was done by Clemens and McMurray grading[3] (►**Table 1**) which graded the hypertrophy according to their scale of obstruction at the choana.

Both procedures were performed under general anesthesia with orotracheal intubation.

Table 1 Clemens and McMurray grading of adenoid hypertrophy

Grade 1	Obstruction up to one-third of the vertical height of the choana
Grade 2	Obstruction from one-third to two-thirds of the vertical height of the choana
Grade 3	Obstruction of two-thirds to nearly all but not the complete filling of the choana
Grade 4	Complete obstruction of the choana

Measurement of Operative Time and Intraoperative Blood Loss

The time from the placement of the Boyle-Davis mouth gag to the complete excision of adenoid tissue was used to calculate the duration of surgery. In conventional adenoidectomy, the intraoperative blood loss was calculated from the number of gauze pieces soaked in blood. A 2×2 cm soaked gauze piece has a carrying capacity of 4.5 mL of blood. This was multiplied by the total number of gauze pieces soaked in blood.

In endoscope-assisted adenoidectomy, the blood loss was measured by the blood collected in the suction apparatus, minus the irrigation solution. Blood loss calculated from soaked gauze pieces were also added.

Conventional Curettage Method

In this method, after placing the patient in the supine position, a Boyle-Davis mouth gag was placed and St. Clair Thompson adenoid curette of appropriate size was selected. The adenoid curette with the guard was introduced into the nasopharynx until the free edge touches the posterior border of the nasal septum and then pressed posteriorly to engage the nasopharynx. Adenoid tissue was removed with a curette. Hemostasis was accomplished by compression with a gauze pack. Digital palpation confirmed the completeness of removal.

Endoscopic-Assisted Adenoidectomy

Nasal cavities were decongested using lints containing 4% lignocaine and adrenaline after which adenoidectomy was done under guidance of a 0-degree Karl Storz endoscope of 2.7-mm diameter (4 mm for older patients) with the help of a microdebrider (Medtronics) either through intranasal or transoral route. The rotational speed was adjusted at 1,500 revolutions per minute.

Follow-Up

The follow-up of patients was done postoperatively at 1 week, 3 months, and 1 year in both groups, first two follow-ups were conducted at the OPD. The follow-up after 1 year was done via telephonic conversation. Patients were asked for any symptoms during the past 1 year suggestive of recurrence such as nasal obstruction, mouth breathing, snoring, recurrent upper respiratory infections, ear pain or discharge, sleep disturbance, or the persistence of those symptoms for which the surgery was done.

Statistical Analysis

Data was analyzed using SPSS software version 25. Quantitative variables were expressed in terms of percentage and proportions. The intraoperative parameters were analyzed using mean ± standard deviation and independent *t*-test.

Results

The median age of patients was 7 years (range: 3–23 years). Out of 36 participants, group A had 18 (10 males and 8 females) and group B had 12 males and 6 females. There was a male preponderance of 61.1%.

The most common symptoms were mouth breathing (86.1%), nasal obstruction (63.9%), and snoring (58.3%). Adenoid hypertrophy grading based on Clemens and McMurray grading[3] showed grade 3 adenoid hypertrophy in 15 patients (41.6%) and grade 4 in 21 (58.3%), out of which 12 (33%) had adenoid facies. Out of 36 patients, 30 (86%) presented to the hospital within 3 years of onset of symptoms.

The average operative time taken in the conventional adenoidectomy group was 13.89 ± 4.837 minutes as compared with 19.44 ± 4.706 minutes in the endoscope-assisted adenoidectomy group. Statistical analysis using independent *t*-test showed statistical significance ($p = 0.001$). The average amount of blood loss in the conventional group was 21.528 ± 2.51 mL whereas in the endoscope-assisted group was 24.889 ± 4.45 mL. The blood loss was higher in the endoscope-assisted group and was statistically significant ($p = 0.009$).

Postoperatively, there were no complications observed in the study population. Participants were followed up after 7 days, 3 months, and at 1 year. None of the patients in both the groups had any symptoms of recurrence or persistence during the 1-year follow-up period.

Discussion

Adenoidectomy is one of the common operative procedures done in the pediatric age group.[4] With the advent of endoscopes, there has been an increase in endoscope assisted adenoidectomy due to its safety and precision via direct visualization and removal of the lateral adenoid tissue.[5] Conventional curettage technique is a blind technique for adenoidectomy wherein the adenoid tissue is removed by the curette. The lateral portion of the adenoid tissue near the Eustachian tube and superior part of the nasopharynx are generally inaccessible during curettage technique. The chances of damage to the adnexal tissues are higher as it is performed without direct vision.[5]

In our prospective comparative study, we enrolled 36 participants, 22 (61.1%) were males and 14 (38.9%) were females. The male preponderance observed in our study was also observed in other studies.[5–7] Majority belonged to the age group of 6 to 10 (50%). Similar results were reported by Somani et al[8] and Das et al.[9] The time interval between the onset of symptoms and the hospital presentation was within 3 years of onset of symptoms (86%). The most common presenting symptoms were mouth breathing (86.1%), nasal obstruction (63.9%), and snoring (58.3%) which were similar to other studies.[6–8,10] Majority presented with grade 4 (58%) hypertrophy. Adenoid facies was observed in 12 patients (33%) and all had grade 4 hypertrophy. We observed that a higher grade of hypertrophy can lead to more obstruction and development of adenoid facies. Several studies suggests that the higher the grade of adenoid hypertrophy, the more severe the symptoms.[9,11]

Our comparison of the mean duration of surgery, the endoscope-assisted adenoidectomy group (19.44 minutes) was longer than the conventional adenoidectomy group (13.89 minutes). The difference in the mean duration was statistically significant when compared with an independent *t*-test. This result was similar to other studies as shown in ►**Table 2**.[5,6,12]

It was observed that the overall operative time was less in conventional adenoidectomy as the procedure was done blindly with the help of only palpation. Whereas in endoscope-assisted adenoidectomy the following factors could have contributed to the increased operative time: the instrumentation setup, initial steps of nasal decongestion, use of extra instruments, and the bit-by-bit removal of adenoids under vision, which demands longer time.

Table 2 Blood loss and time taken for conventional and endoscope-assisted adenoidectomy from different studies

Study	Time taken for conventional adenoidectomy (min)	Time taken for endoscopic adenoidectomy (min)	*p*-Value
Juneja et al	19.80	34.08	< 0.05[a]
Bradoo et al	9.00	14.00	< 0.05[a]
Modi et al	16.15	22.9	< 0.05[a]
Our study	13.89	19.44	< 0.05[a]
Study	**Blood loss in conventional adenoidectomy (mL)**	**Blood loss in endoscopic adenoidectomy using microdebrider (mL)**	***p*-Value**
Datta et al	21	31.67	< 0.05[a]
Modi et al	35.57	37.14	> 0.05
Juneja et al	46.8	49	> 0.05
Bradoo et al	33	38	> 0.05
Our study	21.52	24.889	< 0.05[a]

[a]$p < 0.05$, statistically significant.

On comparing the intraoperative blood loss, the endoscope-assisted group (24.889 mL) was more than the conventional group (21.528 ml). These were similar to other studies as condensed in ►**Table 2**. The proposed causes for increased intraoperative blood loss in endoscope-assisted adenoidectomy in our study and similar studies were: endoscope-assisted adenoidectomy involves the direct visualization of adenoids and removal of adenoid tissue with a microdebrider, causing the raw bleeding surface to be exposed for a longer time. This leads to an increased amount of bleeding and suctioning to achieve hemostasis. The blade of the microdebrider is a powered instrument and can cause harm to the underlying muscle leading to excessive ooze, perhaps increasing intraoperative blood loss.

The initial follow-ups were at 1st week and 3 months postsurgery and were conducted in OPD with the help of an endoscope. Follow-up after 1 year was performed via telephonic interrogation for persistent symptoms as use of endoscopes were limited by the coronavirus disease 2019 (COVID-19) pandemic and subsequent lockdown. It revealed that none of the patients in both groups suffered from any symptoms during the 1-year period following surgery.

Bradoo et al[12] followed up patients for a period of 3 months wherein 14 (87.5%) patients operated with conventional method and 5 (31.2%) patients operated with endoscopic method had residual adenoid tissue. Modi et al[6] noted that in the conventional group, 8 (38%) patients had persistence of symptoms and had residual adenoids after 3 weeks postoperatively.

In our study, the duration of surgery and intraoperative bleeding in conventional adenoidectomy was less in comparison to the endoscope-assisted method. In health centers where the cost of procurement and the maintenance of instruments like microdebrider are difficult, surgeons may resort to the conventional curettage method. Based on the results of our study, both procedures can be considered safe procedures.

The limitation of our study is a small sample size. The reduction in sample size was due to the outbreak of the COVID-19 pandemic. Future studies with a larger sample size will further validate the results of the study.

Conclusion

The conventional curettage method and endoscopic-assisted adenoidectomy are safe and reliable procedures. When limiting factors like cost, instrument procurement, and maintenance are considered, conventional adenoidectomy can be done. Endoscopic-assisted adenoidectomy has the added advantage of direct removal under vision.

Data Availability Statement

The authors will share the data on request.

Ethical Clearance

Signed informed consent for participation and publication of medical details were obtained from the parent of the subject. Confidentiality was ensured at all stages.

Patient Consent From

Consent taken from parents and in case the participant was above 18 years of age, consent was taken from them.

Ethical Approval

Ethical approval was taken from Institutional Review Board.

Conflict of Interest

None declared.

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